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(12) United States Patent

(54) SEMICONDUCTOR DEVICE FOR ISOLATING A PHOTODIODE TO REDUCE JUNCTION LEAKAGE

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Related U.S. Application Data

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- (52) **U.S. Cl.** **257/233**; 257/292

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(58) **Field of Classification Search** 257/233, 257/292, 350, 351, 353 See application file for complete search history.

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EP 1028470 A2 * 8/2000

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(57) ABSTRACT

An improved semiconductor device that reduces reverse bias junction leakage in a photodiode by using a junction isolation region to isolate the photodiode from a trench isolation region. The improved semiconductor device improves image quality for different applications such as stand-alone digital cameras and digital cameras embedded in other imaging devices such as cellular phones and personal digital assistants.

19 Claims, 6 Drawing Sheets

